

# Half Wave Spaced ROTOTILLER® Models

The half wavelength spaced antenna array is a variation of the standard full wavelength spaced array. This configuration is available for all styles of ERI side mounted, circularly polarized, FM antennas.

## Benefits

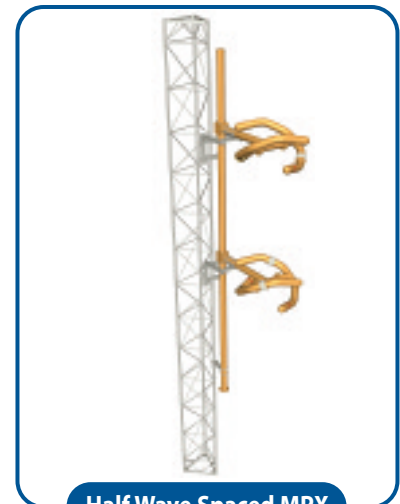
- The phase difference between the elements produces a reduction in downward radiation levels. This reduction will drastically diminish RFR levels at the base of the support structure.
- Array bandwidth is increased at the antenna input.
- Additional elements per antenna aperture will grant a modest increase in antenna power gain.
- Significantly lower downward radiation levels to help broadcasters comply with OSHA Safe Radiation Levels.
- RFI problems in studio equipment, telephone lines and other RF sensitive devices are virtually eliminated.
- The rate of VSWR change due to radial ice accumulation is minimized.
- The increase in antenna power gain will allow for reduced TPO requirements or increased ERP without transmitter or transmission line changes.

## Specifications

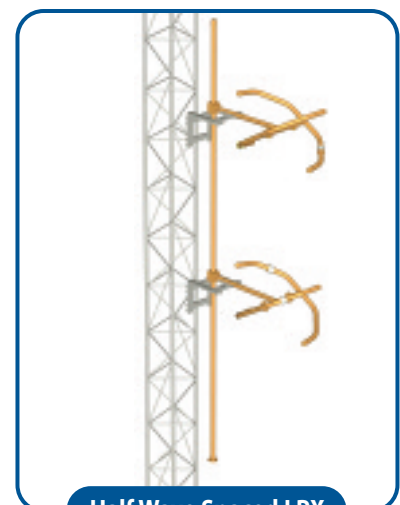
Frequency Range:	88 to 108 MHz, single frequency or multiplexed versions available
Polarization:	Circular (Clockwise)
RF Input:	3-1/8-inch or 6-1/8-inch EIA Flange
Azimuth Pattern Circularity:	$\pm 2$ dB in free space
Axial Ratio:	Less than 3 dB in free space
VSWR at Input:	1.07:1 or less (with field matching) 1.25:1 or less, top pole or Lambda Section mounting; 1.5:1 or less side mount (without field matching)



Half Wave Spaced SHPX



Half Wave Spaced MPX



Half Wave Spaced LPX



# Half Wave Spaced ROTOTILLER® Models

## Electrical Specifications

### SHPX Series Circularly Polarized FM Antenna

A Model Half Wave Spaced Elements, 3-1/8-inch Interbay Line, 3-1/8-inch Element Stem

Model	Power Gain	dB Gain	Female 50 Ohm Input (Inches)	Input Feed	Input Power Rating kW
SHPX-2AE-HW	0.702	-1.5366	3-1/8	End	32
SHPX-2AC-HW	0.702	-1.5366	3-1/8	Center	39
SHPX-2AC6-HW	0.702	-1.5366	6-1/8	Center	64
SHPX-3AE-HW	1.012	0.0518	3-1/8	End	32
SHPX-3AC-HW	1.012	0.0518	3-1/8	Off Center	39
SHPX-3AC6-HW	1.012	0.0518	6-1/8	Off Center	64
SHPX-4AE-HW	1.307	1.1628	3-1/8	End	32
SHPX-4AC-HW	1.307	1.1628	3-1/8	Center	39
SHPX-4AC6-HW	1.307	1.1628	6-1/8	Center	64
SHPX-5AE-HW	1.612	2.0737	3-1/8	End	32
SHPX-5AC-HW	1.612	2.0737	3-1/8	Off Center	39
SHPX-5AC6-HW	1.612	2.0737	6-1/8	Off Center	64
SHPX-6AC-HW	1.913	2.8171	3-1/8	Center	39
SHPX-6AC6-HW	1.913	2.8171	6-1/8	Center	64
SHPX-7AC-HW	2.217	3.4577	3-1/8	Off Center	39
SHPX-7AC6-HW	2.217	3.4577	6-1/8	Off Center	64
SHPX-8AC-HW	2.519	4.0123	3-1/8	Center	39
SHPX-8AC6-HW	2.519	4.0123	6-1/8	Center	64
SHPX-9AC-HW	2.823	4.5071	3-1/8	Off Center	39
SHPX-9AC6-HW	2.823	4.5071	6-1/8	Off Center	64
SHPX-10AC-HW	3.126	4.9499	3-1/8	Center	39
SHPX-10AC6-HW	3.126	4.9499	6-1/8	Center	64
SHPX-11AC-HW	3.429	5.3517	3-1/8	Off Center	39
SHPX-11AC6-HW	3.429	5.3517	6-1/8	Off Center	64
SHPX-12AC-HW	3.732	5.7194	3-1/8	Center	39
SHPX-12AC6-HW	3.732	5.7194	6-1/8	Center	64

### SHPX Series Circularly Polarized FM Antenna

B Model Half Wave Spaced Elements, 4-1/8-inch Interbay Line, 4-1/8-inch Element Stem

Model	Power Gain	dB Gain	Female 50 Ohm Input (Inches)	Input Feed	Input Power Rating kW
SHPX-2BE-HW	0.702	-1.5366	6-1/8	End	56
SHPX-2BC-HW	0.702	-1.5366	6-1/8	Center	80
SHPX-3BE-HW	1.012	0.0518	6-1/8	End	56
SHPX-3BC-HW	1.012	0.0518	6-1/8	Center	112
SHPX-4BE-HW	1.307	1.1628	6-1/8	End	56
SHPX-4BC-HW	1.307	1.1628	6-1/8	Center	112
SHPX-5BE-HW	1.612	2.0737	6-1/8	End	56
SHPX-5BC-HW	1.612	2.0737	6-1/8	Center	112
SHPX-6BC-HW	1.913	2.8171	6-1/8	Center	112
SHPX-7BC-HW	2.217	3.4577	6-1/8	Off Center	112
SHPX-8BC-HW	2.519	4.0123	6-1/8	Center	112
SHPX-9BC-HW	2.823	4.5071	6-1/8	Off Center	112
SHPX-10BC-HW	3.126	4.9499	6-1/8	Center	112
SHPX-11BC-HW	3.429	5.3517	6-1/8	Off Center	112
SHPX-12BC-HW	3.732	5.7194	6-1/8	Center	112

**NOTE:** (1) Antenna weight and wind load are approximate values for a typical structure assuming no top load. Final design loads will vary for specific projects and should be verified by an ERI representative.  
(2) Wind loads are calculated in accordance with the ANSI/TIA/EIA 222-F standard. Weight and effective wind area (CaC) includes antenna, inner transmission feed and typical support mast and mounting brackets with no ice.

# Half Wave Spaced ROTOTILLER® Models

## Electrical Specifications (continued)

### SHPX Series Circularly Polarized FM Antenna

C Model Half Wave Spaced Elements, 6-1/8-inch Interbay Line, 4-1/8-inch Element Stem

Model	Power Gain	dB Gain	Female 50 Ohm Input (Inches)	Input Feed	Input Power Rating kW
SHPX-2CE-HW	0.702	-1.5366	6-1/8	End	80
SHPX-4CE-HW	1.307	1.1628	6-1/8	End	120
SHPX-6CE-HW	1.913	2.8171	6-1/8	End	120

### MPX Series Circularly Polarized FM Antenna

Half Wave Spaced Elements

Model	Power Gain	dB Gain	Female 50 Ohm Input (Inches)	Input Feed	Input Power Rating kW
MPX-2E-HW	0.702	-1.5366	3-1/8	End	18
MPX-2C-HW	0.702	-1.5366	3-1/8	Center	18
MPX-3E-HW	1.012	0.0518	3-1/8	End	18
MPX-3C-HW	1.012	0.0518	3-1/8	Off Center	18
MPX-4E-HW	1.307	1.1628	3-1/8	End	18
MPX-4C-HW	1.307	1.1628	3-1/8	Center	18
MPX-5E-HW	1.612	2.0737	3-1/8	End	18
MPX-5C-HW	1.612	2.0737	3-1/8	Off Center	18
MPX-6C-HW	1.913	2.8171	3-1/8	Center	18
MPX-7C-HW	2.217	3.4577	3-1/8	Off Center	18
MPX-8C-HW	2.519	4.0123	3-1/8	Center	18
MPX-9C-HW	2.823	4.5071	3-1/8	Off Center	18
MPX-10C-HW	3.126	4.9499	3-1/8	Center	18
MPX-11C-HW	3.429	5.3517	3-1/8	Off Center	18
MPX-12C-HW	3.732	5.7194	3-1/8	Center	18

### LPX Circularly Polarized FM Antenna

Half Wave Spaced Elements

Model	Power Gain	dB Gain	Female 50 Ohm Input (Inches)	Input Feed	Input Power Rating kW
LPX-2E-HW	0.702	-1.5366	1-5/8	End	9
LPX-2C-HW	0.702	-1.5366	3-1/8	Center	12
LPX-3E-HW	1.012	0.0518	1-5/8	End	9
LPX-3C-HW	1.012	0.0518	3-1/8	Off Center	12
LPX-4E-HW	1.307	1.1628	1-5/8	End	9
LPX-4C-HW	1.307	1.1628	3-1/8	Center	12
LPX-5E-HW	1.612	2.0737	1-5/8	End	9
LPX-5C-HW	1.612	2.0737	3-1/8	Off Center	12
LPX-6C-HW	1.913	2.8171	3-1/8	Center	12
LPX-7C-HW	2.217	3.4577	3-1/8	Off Center	12
LPX-8C-HW	2.519	4.0123	3-1/8	Center	12
LPX-9C-HW	2.823	4.5071	3-1/8	Off Center	12
LPX-10C-HW	3.126	4.9499	3-1/8	Center	12
LPX-11C-HW	3.429	5.3517	3-1/8	Off Center	12
LPX-12C-HW	3.732	5.7194	3-1/8	Center	12

**NOTE:** (1) Antenna weight and wind load are approximate values for a typical structure assuming no top load. Final design loads will vary for specific projects and should be verified by an ERI representative.  
 (2) Wind loads are calculated in accordance with the ANSI/TIA/EIA 222-F standard. Weight and effective wind area (CaAc) includes antenna, inner transmission feed and typical support mast and mounting brackets with no ice.



# Half Wave Spaced ROTOTILLER® Models

## Mechanical Specifications

### SHPX Series Circularly Polarized FM Antenna

A Model Half Wave Spaced Elements, 3-1/8-inch Interbay Line, 3-1/8-inch Element Stem

Model	Antenna Weight (pounds)				Antenna CaAa (square feet)			
	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice
SHPX-2AE-HW	206	358	306	608	8.39	10.68	16.95	19.33
SHPX-2AC-HW	236	388	336	638	9.57	12.67	18.13	21.32
SHPX-2AC6-HW	301	458	401	708	11.00	13.44	19.56	22.09
SHPX-3AE-HW	305	529	455	904	12.09	15.42	24.93	28.40
SHPX-3AC-HW	335	559	485	934	13.27	17.41	26.11	30.39
SHPX-3AC6-HW	400	629	550	1004	14.7	18.18	27.54	31.16
SHPX-4AE-HW	404	700	604	1200	15.78	20.17	32.90	37.48
SHPX-4AC-HW	434	730	634	1230	16.96	22.16	34.08	39.47
SHPX-4AC6-HW	499	805	699	1305	18.39	22.93	35.51	40.24
SHPX-5AE-HW	503	871	753	1496	19.48	24.92	40.88	46.55
SHPX-5AC-HW	533	901	783	1526	20.66	26.91	42.06	48.54
SHPX-5AC6-HW	598	976	848	1601	22.09	27.68	43.49	49.31
SHPX-6AC-HW	632	1072	932	1822	24.35	31.65	50.03	57.61
SHPX-6AC6-HW	697	1152	997	1902	25.78	32.42	51.47	58.38
SHPX-7AC-HW	731	1243	1081	2118	28.04	36.39	58	66.68
SHPX-7AC6-HW	796	1328	1146	2203	29.47	37.16	59.45	67.45
SHPX-8AC-HW	830	1414	1230	2414	31.74	41.14	65.99	75.76
SHPX-8AC6-HW	895	1499	1295	2499	33.18	41.92	67.42	76.53
SHPX-9AC-HW	929	1585	1379	2710	35.44	45.89	73.98	84.84
SHPX-9AC6-HW	994	1670	1444	2795	36.89	46.68	75.39	85.61
SHPX-10AC-HW	1028	1756	1528	3006	39.13	50.64	81.94	93.90
SHPX-10AC6-HW	1093	1846	1593	3096	40.57	51.41	83.37	94.67
SHPX-11AC-HW	1127	1927	1677	3302	42.82	55.39	89.9	102.96
SHPX-11AC6-HW	1192	2022	1742	3397	44.25	56.14	91.35	103.73
SHPX-12AC-HW	1226	2142	1826	3598	46.53	60.13	97.89	112.04
SHPX-12AC6-HW	1291	2237	1891	3693	47.96	60.90	99.33	112.82

### SHPX Series Circularly Polarized FM Antenna

B Model Half Wave Spaced Elements, 4-1/8-inch Interbay Line, 4-1/8-inch Element Stem

Model	Antenna Weight (pounds)				Antenna CaAa (square feet)			
	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice
SHPX-2BE-HW	295	480	395	730	9.37	11.74	17.93	20.39
SHPX-2BC-HW	395	565	495	815	11.55	13.72	20.12	22.33
SHPX-3BE-HW	435	705	585	1080	13.47	16.90	26.31	29.88
SHPX-3BC-HW	535	790	685	1165	15.65	18.88	28.5	31.82
SHPX-4BE-HW	575	930	775	1430	17.56	22.07	34.69	39.37
SHPX-4BC-HW	675	1000	875	1500	19.30	23.78	36.43	41.09
SHPX-5BE-HW	715	1155	965	1780	21.66	27.23	43.06	48.86
SHPX-5BC-HW	815	1225	1065	1850	23.4	28.94	44.8	50.58
SHPX-6BC-HW	955	1435	1255	2185	27.05	33.84	52.73	59.80
SHPX-7BC-HW	1095	1645	1445	2520	30.7	38.74	60.66	69.02
SHPX-8BC-HW	1235	1870	1635	2870	34.80	43.90	69.04	78.51
SHPX-9BC-HW	1375	2095	1825	3220	38.9	49.06	77.42	88
SHPX-10BC-HW	1515	2305	2015	3555	42.55	53.96	85.35	97.23
SHPX-11BC-HW	1655	2515	2205	3890	46.2	58.86	93.28	106.46
SHPX-12BC-HW	1795	2740	2395	4240	50.30	64.02	101.66	115.94

# Half Wave Spaced ROTOTILLER® Models

## Mechanical Specifications (continued)

### SHPX Series Circularly Polarized FM Antenna

C Model Half Wave Spaced Elements, 6-1/8-inch Interbay Line, 4-1/8-inch Element Stem

Model	Antenna Weight (pounds)				Antenna CaAa (square feet)			
	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice
SHPX-2CE-HW	317	527	417	777	10.88	13.25	19.44	21.90
SHPX-4CE-HW	611	1011	811	1511	20.15	24.65	37.27	41.96
SHPX-6CE-HW	905	1495	1205	2245	29.41	36.06	55.1	62.01

### MPX Series Circularly Polarized FM Antenna

Half Wave Spaced Elements

Model	Antenna Weight (pounds)				Antenna CaAa (square feet)			
	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice
MPX-2E-HW	142	238	230	404	7.37	9.73	12.47	15.09
MPX-2C-HW	172	285	260	454	8.55	11.72	13.64	17.08
MPX-3E-HW	209	349	341	598	10.56	14.00	18.20	22.04
MPX-3C-HW								
MPX-4E-HW	276	460	452	792	13.74	18.27	23.93	28.99
MPX-4C-HW	306	507	482	842	14.92	20.26	25.11	30.98
MPX-5E-HW	343	571	563	986	16.93	22.54	29.67	35.94
MPX-5C-HW								
MPX-6C-HW	440	729	704	1230	21.29	28.80	36.58	44.88
MPX-7C-HW								
MPX-8C-HW	574	951	926	1618	27.66	37.34	48.05	58.78
MPX-9C-HW								
MPX-10C-HW	708	1173	1148	2006	34.04	45.88	59.52	72.68
MPX-11C-HW								
MPX-12C-HW	842	1395	1370	2394	40.41	54.42	70.98	86.58

### LPX Circularly Polarized FM Antenna

Half Wave Spaced Elements

Model	Antenna Weight (pounds)				Antenna CaAa (square feet)			
	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice	With Antenna Only	With 1/2-inch of Radial Ice	With Radome	With Radome and 1/2-inch of Radial Ice
LPX-2E-HW	118	195	206	343	5.62	8.32	10.67	13.62
LPX-2C-HW	157	247	245	397	7.59	10.50	12.63	15.79
LPX-3E-HW	174	288	306	510	8.15	12.05	15.73	20.00
LPX-3C-HW	213	340	345	564	10.12	14.23	17.69	22.17
LPX-4E-HW	230	381	406	677	10.69	15.79	20.78	26.38
LPX-4C-HW	269	433	445	731	12.66	17.96	22.75	28.55
LPX-5E-HW	286	474	506	844	13.23	19.52	25.84	32.76
LPX-5C-HW	325	526	545	898	15.2	21.69	27.81	34.93
LPX-6C-HW	381	619	645	1065	17.73	25.43	32.87	41.32
LPX-7C-HW	437	712	745	1232	20.26	29.17	37.93	47.71
LPX-8C-HW	493	805	845	1399	22.80	32.89	42.99	54.08
LPX-9C-HW	549	898	945	1566	25.34	36.61	48.05	60.45
LPX-10C-HW	605	991	1045	1733	27.88	40.36	53.11	66.84
LPX-11C-HW	661	1084	1145	1900	30.42	44.11	58.17	73.23
LPX-12C-HW	717	1186	1245	2067	32.95	47.82	63.23	79.60